b) $u_c(t) = E(1-e^{-\frac{t}{RC}}) = \frac{E}{4} \Leftrightarrow e^{-\frac{t}{RC}} = \frac{3}{4} \Leftrightarrow -\frac{t}{RC} = \ell n\frac{3}{4} \Leftrightarrow$

$t = -RC\,\ell n\frac{3}{4} = 2{,}876.10^{-2}\,s$; $u_c(t) = E(1-e^{-\frac{t}{RC}}) = \frac{E}{8} \Leftrightarrow e^{-\frac{t}{RC}} = \frac{7}{8} \Leftrightarrow$

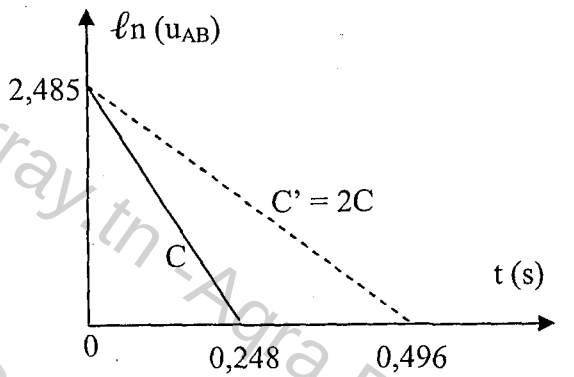
$-\frac{t}{RC} = \ell n\frac{7}{8} \Leftrightarrow t = -RC\,\ell n\frac{7}{8} = 1{,}335.10^{-2}\,s$.

7)

a) $u_{AB}(t) = R.i(t) = E\,e^{-\frac{t}{RC}} \Leftrightarrow \ell n\,(u_{AB}) = \ell n\,E - \frac{t}{RC} = 2{,}485 - 10\,t$:

C'est l'équation d'une droite affine.

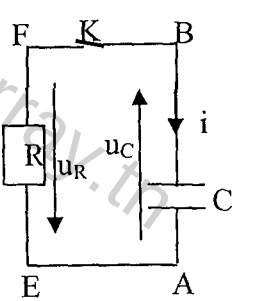
b) C' = 2 C $\Rightarrow \ell n\,(u_{AB}) = \ell n\,E - \frac{t}{2RC} = 2{,}485 - 5\,t$.



EXERCICE 3 :

1) D'après la loi des mailles : $u_{EF} + u_{BA} = 0 \Leftrightarrow u_{EF} + u = 0$

$\Leftrightarrow Ri + \frac{q}{C} = 0 \Leftrightarrow \frac{di}{dt} + \frac{1}{RC}i = 0$



2)

a) $i(t) = A.e^{-\frac{t}{\tau}}$

A t = 0s : $i = A.e^0 = A \neq 0$ et d'après la loi des mailles :

$R.I_0 + U_0 = 0$; $i(0) = I_0 = -\frac{U_0}{R}$ et $\frac{di}{dt} = -\frac{A}{\tau}e^{-\frac{t}{\tau}}$

Qarray.tn-Agra Blech-Qarray.tn